

**Patent Claims**

1. A method for producing a preform for optical fibers by producing a fluorine-doped  $\text{SiO}_2$  cladding glass (4) on a core glass cylinder (3) rotating about its longitudinal axis in that a plasma burner (1) is fed with a silicon-containing starter substance, said substance is oxidized in a plasma flame (2) assigned to the plasma burner (1) to obtain  $\text{SiO}_2$  particles, and the  $\text{SiO}_2$  particles are deposited in layers on the cylindrical outer surface of the core glass cylinder (2) in the presence of fluorine and are sintered into the cladding glass (4) characterized in that a plasma flame (2) which emits ultraviolet light of a wavelength of 214 nm with an intensity of at least 0.9  $\mu\text{W}$ , determined on the basis of the plasma flame intensity measurement, is used for forming and depositing the  $\text{SiO}_2$  particles on the core glass cylinder (3).
2. The method according to claim 1, characterized in that a plasma flame (2) is used which emits light of a wavelength of 214 nm with an intensity ranging from 1.0  $\mu\text{W}$  to 1.4  $\mu\text{W}$ .
3. The method according to any one of the preceding claims, characterized in that the cylindrical outer surface of the core glass cylinder (3) is kept at a surface temperature ranging from 1550°C to 2000°C during deposition of  $\text{SiO}_2$  and that the core glass cylinder (3) has an outer diameter of at least 40 mm.
4. The method according to claim 3, characterized in that the cylindrical outer surface of the core glass cylinder (3) is kept at a surface temperature ranging from 1700°C to 1900°C during deposition of  $\text{SiO}_2$  and that the core glass cylinder (3) has an outer diameter of at least 60 mm.
5. The method according to any one of the preceding claims, characterized in that the  $\text{SiO}_2$  particles are deposited on the cylindrical outer surface in layers with a layer thickness in such a manner that they yield layers with layer thicknesses of not more than 0.05  $\mu\text{m}$  in the optical fibers.

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- 5 6. A method for producing a preform for optical fibers by providing a cladding glass tube consisting of fluorine-doped quartz glass for cladding a core glass, with a silicon-containing starter substance being supplied to a plasma burner for producing the cladding glass tube, said substance being oxidized in a plasma flame assigned to the plasma burner to form  $\text{SiO}_2$  particles, and the  $\text{SiO}_2$  particles being deposited in layers in the presence of fluorine on the cylindrical outer surface of a substrate tube which is rotating about its longitudinal axis and is made from quartz glass, and said particles being sintered, characterized in that the cladding glass tube is collapsed onto the
- 10 core glass cylinder, and that the substrate tube is removed prior to collapsing.
7. The method according to claim 6, characterized in that the substrate tube is removed by etching.
- 15 8. The method according to claim 6 or 7, characterized in that the substrate tube is etched off during production of the cladding glass tube by introducing an etching gas.
9. The method according to claim 8, characterized in that  $\text{SF}_6$  is used as the etching gas.
- 20 10. The method according to any one of claims 6 to 9, characterized in that a substrate tube is used having a wall thickness ranging from 2 mm to 10 mm.